

**AMENDMENTS TO THE DRAWING:**

Please add the legend "PRIOR ART" to FIGS. 1A-1B, as shown in the accompanying drawing.

## REMARKS

The Examiner contended that independent claim 15 of the present application is obvious over Froberg in view of Layton. The applicants respectfully do not agree with that. It is submitted that a person of ordinary skill in the art would immediately note that Froberg and the present invention rely on fundamentally different principles, as explained below.

The important and distinguishing part of both solutions (i.e., the present invention and Froberg) is how the drive signals are generated to obtain optical pulses (RZ) carrying, as transmit data, either the differential phase shift keying (DPSK) or the intensity [intensity modulation (IM) or on-off-keying (OOK)].

Froberg uses the leading and trailing edges of the drive voltage to generate optical pulses by biasing the modulator in the maximum intensity point. To obtain similar and symmetric impulses, the rise and fall times of the drive voltage need to be identical and very stable, and the modulator bias needs to be accurately controlled. In addition, an encoder is required with the sole purpose of generating the drive signal from the NRZ input data in a way that the right output pulse sequence results. It is important to note that the drive voltage in claim 15 of the present invention is not pulses, but a (manipulated) NRZ signal.

The present invention, in turn, uses a very different principle. Rather than generating the pulse stream in the optical domain and using the edges of the electrical NRZ drive signal for the NRZ-to-RZ conversion, the electrical drive signal is already a three-state pulsed signal, which then just needs to be applied to the modulator biased at the zero intensity point. Hence, in contrast to Froberg, the present invention uses a *pulsed* electrical drive signal, whereas Froberg does not.

The Examiner contended that Froberg could be easily modified by the person of ordinary skill in the art by using the teaching of Layton. Yet, such a person would immediately

recognize that this contention is not correct, because optical impulses with two different phase values zero and  $\pi$  are required for the generation of an RZ-DPSK signal. Such an optical signal cannot be obtained by a simple design variant of Froberg using a three-level signal. In fact, Froberg teaches *away* from such a modification, because Froberg's principle of using the edges of the driving signal for the NRZ-RZ conversion would always require two successive pulses to have the same phase imposed on them, thereby rendering the transmission of phase-coded information (the principle of phase shift keying) impossible.

In consequence, the applicants submit that claim 15 is novel and non-obvious over this art, and further that all claims dependent on claim 15 are also novel and non-obvious.

Accompanying Form PTO-1449 lists European Patent No. 1271808, which was cited during the prosecution of the corresponding application in Germany. The Rule 17(p) fee of \$180.00 accompanies this Response.

FIGS. 1A-1B have been designated as prior art, as required. The accompanying substitute Specification has been double-spaced, as required. No new matter has been added.

Wherefore, a favorable action is earnestly solicited.

Respectfully submitted,

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